

Emergency Management Operations and Control Systems (EMOCS)



EMOCS Study Genesis

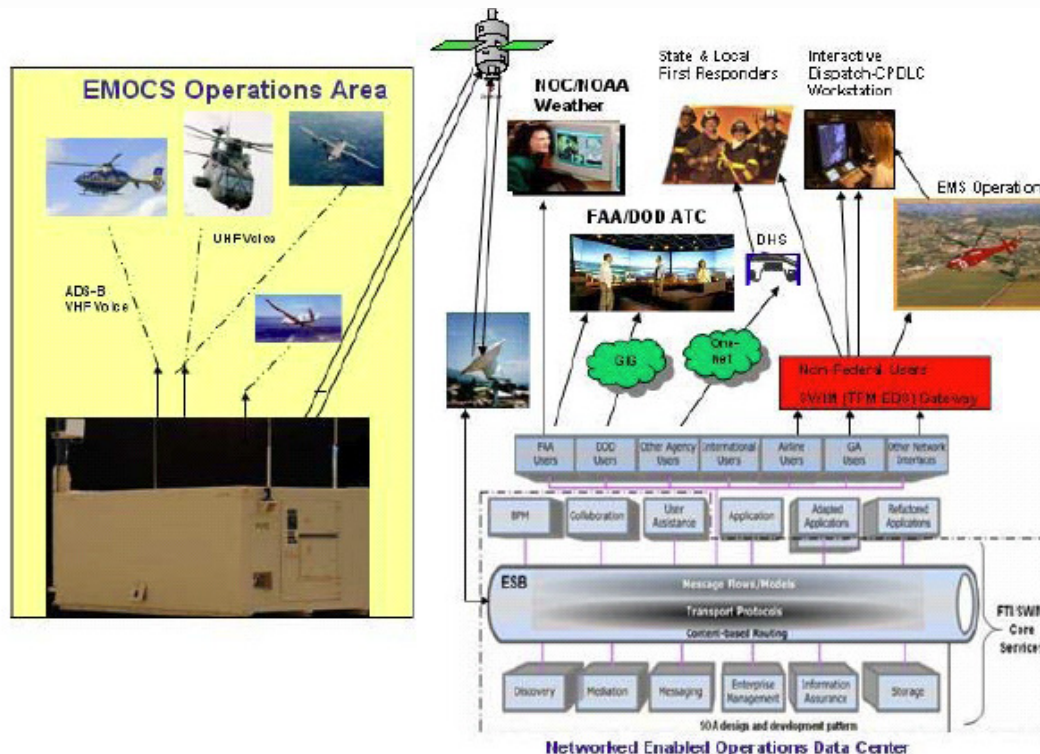
- Major **manmade and natural disasters** have **downgraded or shutdown radar and radio coverage** which are essential to basic aircraft de-confliction and response command and control.
 - Post earthquake – hurricane can bring hundreds of helicopters to the scene.
 - Many work without the benefit of ATC de-confliction services.
 - There is a need for a more robust C³ in an environment where infrastructure no longer operational.
- NAVAIDs essential to all-weather and agile response may be inoperative for an undetermined time depending upon the disaster.
- Seeking to **leverage NextGen technologies** in order to develop a disaster response package.
- The NextGen Institute on behalf of Security Working Group awarded study contract to Harris Corporation in December 2007.
- **January 2009** final report delivered and accepted by work group.
- **February 2009** work group formulated next steps.
- **May 2009** briefed to JPDO leadership
- **July 2009** Next Steps study team effort begins

EMOCS Overview

- Develop an integrated communications/data-switching capability and remote air navigation services and other necessary data/communications requirements in an austere, disaster response environment
- Uses technologies (Commercial-Off-the-Shelf (COTS)) foundational to NextGen
 - Automatic Dependent Surveillance-Broadcast (ADS-B), National Airspace System Voice Switch (NVS), Wide Area Augmentation System (WAAS) Approaches, Data Communications, Ground-to-Cockpit, and subscriber services and among others
- Goal is to provide disaster or major events (e.g., Olympics, Super Bowl, etc.) with effective ATC and emergency management capabilities
- Make the system portable and easily deployable to any location needed
- System should facilitate management of disparate types of data, communications, and tracking systems
- Can bridge service connectivity from headquarters to front line
- Provides platform for remote/reach-back ATC services to affected region

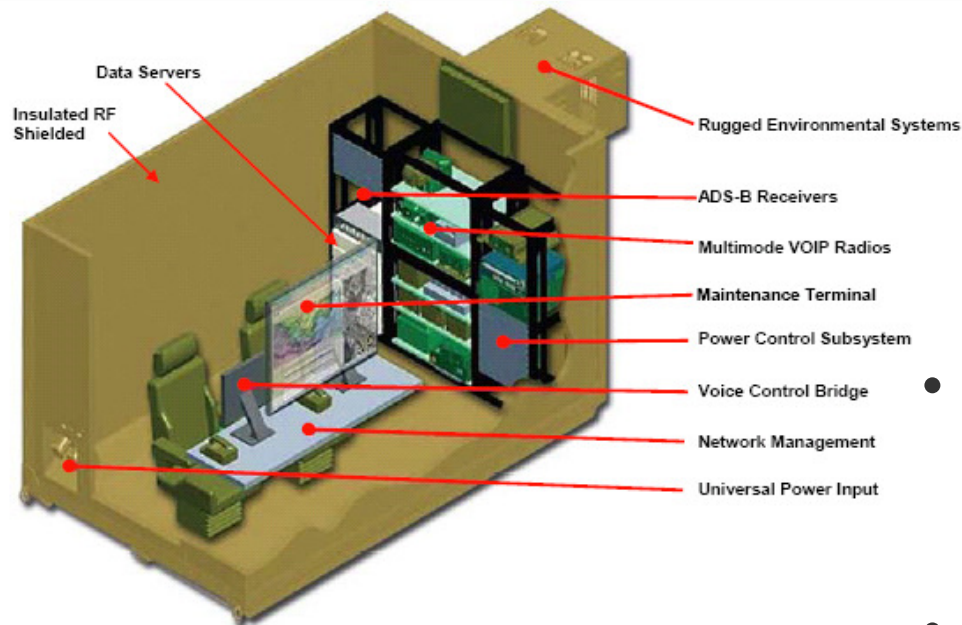


Notional ConOps



- Disaster response network capable facility **linking National networks, ATC CNS and emergency response data, surveillance and voice where fixed systems may experience outages.** Serves Incident Commander and HQ staff SSA.
- **Deployable, self-sustaining** using ADS-B for SSA amongst DoD, FAA and responders.
- **Provides robust, low altitude air traffic separation capability** by offering remote ATC capabilities to relocated/dislocated controllers in remote center.
- EMOCS HUB terminals do not house operators – strictly for maintenance.

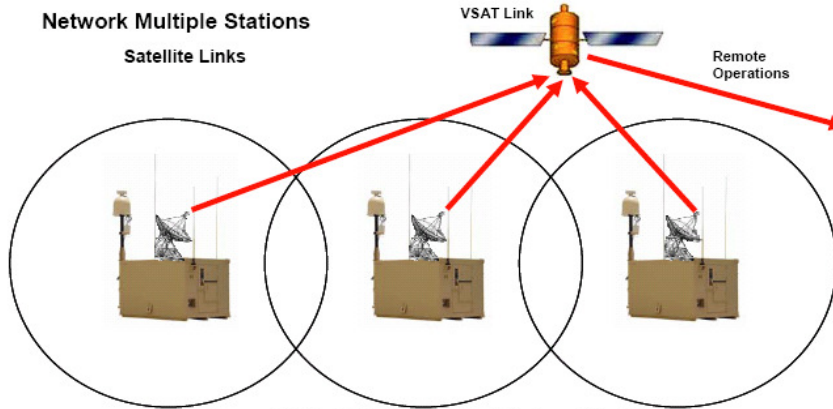
Maintenance Shelter Configuration



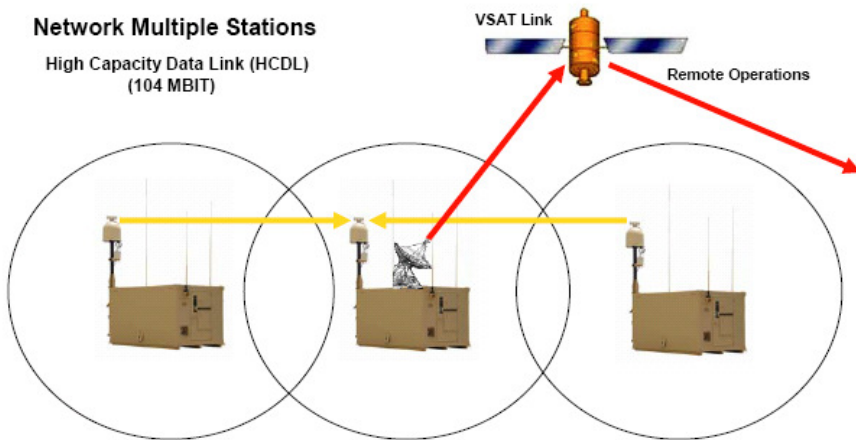
- **Deployable** architecture enables air delivery (helicopter, C-130 or other similar transport) or truck (5-ton).
- Uses **COTS** and provides remote signal of local ADS-B data for ATC.
- Provides **cross-domain communications and data services**.

Multiple Station Configuration

Network Multiple Stations
Satellite Links

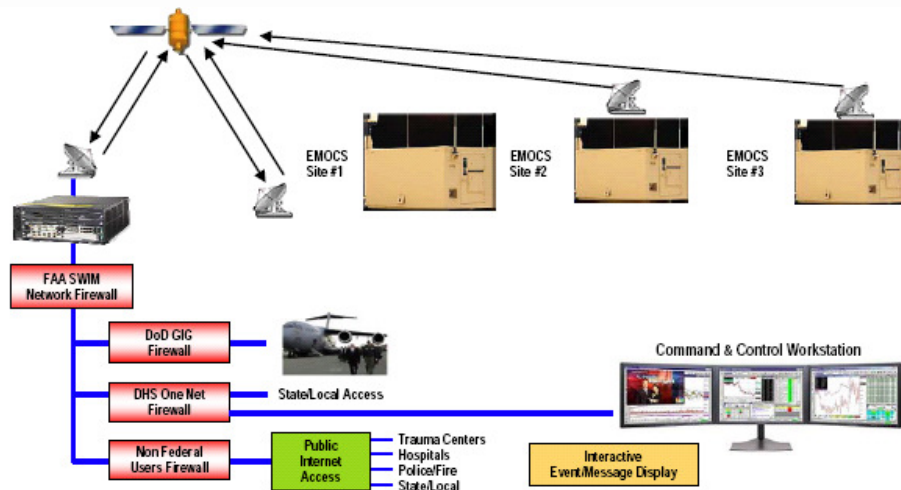


Network Multiple Stations
High Capacity Data Link (HCDDL)
(104 MBIT)



- Networking shelters, either line of sight or via satellite shot, enables connectivity regardless of terrain.
- Provides SSA to various users (USG, State, Local, and Non-government).
- 48 nautical mile range for each unit (ADS-B) low altitude

Networking into USG Systems



- Allows local navigation and Emergency Management data to be shared across common network.
- Takes advantage of existing systems while maintaining information assurance protocols via firewalls and other means.

Study Phasing

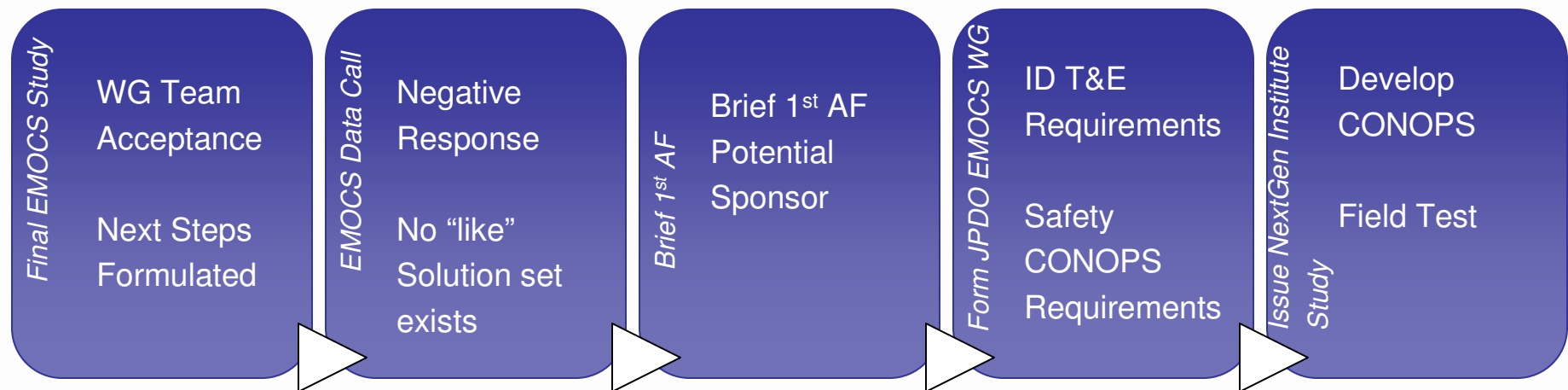
- Phase I – Project Solutions Report **[Spring 08]**
 - Completed with architecture recommendations and conceptual design.
- Phase II – Project Utilization Report **[Summer 08]**
 - Completed describing sites.
- Phase III – Project Implementation Recommendations (Cost) **[Fall 08]**
 - Completed/updated based upon review comments from AVSEC WG
- *T&E Requirements* Study Group **[Underway]**
 - ANS, NCO, Safety, Aircraft, Security

2008 Budget Estimates

EMOCS Deployment Task	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 5	Qtr 6	EMOCS per Shelter Costs	Demonstration Costs
Subassembly/Equipment Procurement	■	■					\$461,900	\$1,847,600
Shelter Assembly/Integration/FAT		■	■				\$27,163	\$108,652
Shelter Installation/Field Test			■	■			\$23,982	\$95,930
Shelter Costs							\$523,506	\$2,052,182
Net-Centric Network Installation & 15 Months Service Costs		■	■	■				\$384,813
EMOCS Communications Access & Interactive Display Terminals (3)			■	■				\$31,777
Portable ADS-B, DataComm & EFB's 6 Systems for Testing			■	■				\$185,000
ADS-B Hazard Beacons for Towers & Non-lighted Obstacles			■					\$8,000
Harris Washington Demo System			■	■				\$0.00
LPV Approach to Trauma Center FAA Provided			■	■				\$0.00
Helicopter & Aircraft Rental				■	■	■		\$40,000
EMOCS 6 Months Demonstration Period				■	■	■		\$992,692
Performance Decision Point				■				
Uninstall EMOCS Shelters						■		\$20,000
Production Decision Point					■			
Refurbish, Clean & update Shelters Final Report & recommendations						■		\$40,000
Project Cost * (Budgetary)								\$3,796,535
w/Travel, Risk, OTE & Fee								\$4,826,454

Next Steps

- Approval/acceptance of current submission
 - AvSec WG Accepted Study
 - Sent out “Data Call” to agencies via JPDO WGs.
 - Briefing 1st AF.
 - EMOCS JPDO Interagency study group underway (Aircraft, Safety, ANS, Security and NCO).



Key Questions

- Questions – this first study provided fundamental capability statements, while creating more questions for T&E Requirements Analysis:
 - Detailed CONOPS and testing.
 - Safety & certification standards for ANS.
 - Integrating cross-agency data/comm protocol issues.
 - Human factors and flight deck workload issues.
 - What agency should be primarily responsible?
 - DHS
 - FAA
 - DoD
 - Continue briefing other agencies

Questions